DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

A404366845

FACILITY: Dow Silicones Corporation		**SRN / ID:** A4043
LOCATION: 3901 S Saginaw Rd, MIDLAND		**DISTRICT:** Bay City
CITY: MIDLAND		**COUNTY:** MIDLAND
CONTACT: Jim Alger , Midland Area State Air Permitting Specialist		**ACTIVITY DATE:** 03/29/2023
STAFF: Adam Shaffer	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MEGASITE
SUBJECT: Partial Compliance Evaluation of EU2504-13, EU2504-14, EU2504-15 and EU2504-16.		
RESOLVED COMPLAINTS:		

A partial compliance evaluation (PCE) consisting of an onsite inspection and records review was conducted by Air Quality Division (AQD) staff Adam Shaffer (AS) of the Dow Silicones Corporation (DSC) site located in Midland, MI. Applicable records were requested on March 21, 2023, to verify compliance with Renewable Operating Permit (ROP) No. MI-ROP-A4043 -2019a, specifically emission units (EU)2504-13, EU2504-14, EU2504-15 and EU2504-16. Through these four emission units, select records were requested and reviewed through flexible group (FG)MONMACT. An in-person inspection to verify compliance was later completed on March 29, 2023.

Facility Description

DSC is a chemical processing facility. The facility is a mega-site and is a major source of hazardous air pollutants (HAPs), nitrox oxides (NOx), particulate matter (PM) and volatile organic compounds (VOCs). Additionally, the site is subject to various federal regulations and the site is operating under an EPA Civil Order No. 19-11880.

Offsite Compliance Review

DSC is required to submit semi-annual and annual compliance reports per Part A General Conditions 19-23 of MI-ROP-A4043-2019a. Previous reports were reviewed for select time periods. In the most annual compliance report submitted for 2022, one deviation was noted for EU2504-13 and EU2504-15. The deviation was described as equipment in the process being operated when the coolant outlet temperature of the chilled water / glycol condenser train was above 40-degrees Fahrenheit. The deviation lasted for 32 minutes and was determined to be the result of the temperature transmitter on the primary chiller unit had a signal loss caused by vibrations. The units were venting to the THROX at the time of the excursion, which was operating properly. DSC fixed the wiring and replaced the unit with a new temperature transmitter with reinforced steel connections that would be less susceptible to vibrations. This appears acceptable.

A second deviation was noted for EU2504-16 and was described as trace levels of ethylene oxide were discovered during vent stack testing that was not included in the permit to install application as having a potential to emit. It was believed that the ethylene oxide was due to an impurity in a raw material. Recent raw material sampling has shown no ethylene oxide concentrations. A revised permit to install application is to be submitted the second quarter of 2023. This appears acceptable and no further action is necessary at this time.

Several additional deviations potentially related to EU2504-13, EU2504-14, EU2504-15, and EU2504-16 were noted, however, the deviations did not appear to be cause for a notice of violation.

Based on the timing of the inspection, the 2022 Michigan Air Emissions Reporting System (MAERS) Report was reviewed. Upon review it appears DSC uses "Emission Master" software when determining emissions for each product. DSC uses MAERS emission factors for natural gas used. Additionally, fugitive emissions such as from LDAR monitoring and emissions from spills are added in as well. Upon initial review of the MAERS Report, discrepancies were noted between the emissions reported and the records provided for several recent inspections. In a follow up phone conversation on April 24, 2023, it was concluded that the discrepancies were from DSC reporting both process emissions and fugitive emissions together. Data was reviewed for several emission units inspected. Minor errors were noted, however, after further review the 2022 MAERS Report appears acceptable. Additionally, at this time the supporting documentation is acceptable, though it was stated to DSC staff moving forward that more specific supporting documentation to better understand how DSC came to the amount of emissions reported per each unit will be required.

Compliance Evaluation

A request was sent to Mr. Jim Alger, Midland Area State Air Permitting Specialist, of DSC on March 21, 2023, for records required by ROP No. MI-ROP-A4043-2019a, specifically for EU2504-13, EU2504-14, EU2504-15, EU2504-16, and FGMONMACT. The onsite inspection was later completed on March 29, 2023.

AQD staff AS arrived at the facility at 8:24am. Weather conditions at the time were cloudy skies, temperatures in the middle 30's degrees Fahrenheit, and winds to the east / northeast at 10-15 mph. Upon arrival AS met with Mr. Adler and several other company staff to initially go over records and later was provided a tour of the site, specifically, EU2504-13, EU2504-14, EU2504-15, and EU2504-16. Follow up records were provided by Mr. Alger and site-specific questions were answered by company staff at the time.

As mentioned above DSC is a chemical processing facility. During the inspection, the components of EU2504-13, EU2504-14, EU2504-15 EU2504-16, and FGMONMACT were reviewed and discussed at length with company staff.

It was noted by company staff prior to the inspection that due to the recent identification of ethylene oxide and due to the new standards for the National Emission Standards for Hazardous Air Pollutants (NESHAP) Miscellaneous Organic Chemical Manufacturing (Subpart FFFF), EU2504-14, EU2504-15 and EU2504-16 had been connected to and were now also controlled by the THROX. DSC is utilizing the Rule 285(2)(e) exemption which allows the installation, construction, or replacement of air pollution control equipment for an existing process or process equipment for the purpose of complying with the national emission standards of hazardous air pollutants regulated under section 112 of the clean air act.

ROP No. MI-ROP-A4043-2019a

EU2504-13

This emission unit is for a siloxane kettles process consisting of three jacketed batch kettles and ancillary equipment. Emissions are controlled by a vent recovery system consisting of two parallel condenser trains, condensers 24608 / 24609 and condensers 24610 / 24611.

EU2504-14

This emission unit is for a batch reaction process consisting of a jacketed batch kettle DV19840, a receiver, and a vacuum system. Emissions are controlled by a vent recovery system consisting of two parallel condenser trains, condensers 24608 / 24609 and condensers 24610 / 24611. This emission unit is subject to the requirements of 40 CFR Part 63, Subpart FFFF and Subpart UU.

EU2504-15

This emission unit is for a batch reaction process consisting of jacketed batch kettle DV19860, a receiver, and vacuum system. Emissions are controlled by a vent recovery system consisting of two parallel condenser trains, condensers 24608 / 24609 and condensers 24610 / 24611. This emission unit is subject to the requirements of 40 CFR Part 63, Subpart FFFF and Subpart UU.

EU2504-16

This emission unit is for the mixing process in 8200 Kettle with product. Emissions are controlled by a vent recovery system consisting of two parallel condenser trains, condensers 24608 / 24609 and condensers 24610 / 24611. This emission unit is subject to the requirements of 40 CFR Part 63, Subparts FFFF and UU.

Onsite observations (EU2504-13, EU2504-14, EU2504-15, EU2504-16)

Per special condition (SC) III.1, the permittee shall not operate equipment in EU2504-13 / EU2504-14 / EU2504-15 / EU2504-16 that exhaust to the vent recovery system unless the coolant outlet temperature of the chilled water / glycol condenser train (24608 / 24609 or 24610 / 24611) through which the emission units emissions are being exhausted is 40 degrees Fahrenheit or less. Speaking with company staff it was determined that the condenser trains are typically both used unless one is down for events such as routine maintenance etc. The two condenser trains were identified as (24608 – 24609) which is the south train and (24610 – 24611) as the north train. Records were requested and reviewed for select time periods. One instance was noted on November 10, 2022, where the temperature exceeded the 40 degrees Fahrenheit limit. This deviation applied to several emission units which included EU2504-13 and EU2504-15. As described above, the unit was venting to the THROX at the time of the excursion, which was operating properly. No additional instances were noted in the records reviewed where the temperature was greater than 40 degrees Fahrenheit. The two condenser trains were observed during the course of the site inspection. At the time of the inspection both condensers were operating between 20-23 degrees Fahrenheit. Based on the records reviewed and onsite operations, the two condenser trains appeared to be being operated in a satisfactory manner.

Per SC IV.1, the permittee shall not operate EU2504-13 / EU2504-14 / EU2504-15 and EU2504-16, except for packaging and filtering operations as applicable, unless the vent recovery system is installed, maintained and operated in a satisfactory manner acceptable to the AQD District Supervisor, which includes operating one service water condenser and one chilled water / glycol condenser in series and includes meeting the requirements of SC III.1. As discussed above, based on the records reviewed and observations made onsite, DSC appears to be operating the applicable emission units in a satisfactory manner.

Per SC IV.2, the permittee shall equip and maintain each condenser (24608, 24609, 24610, and 24611) with a coolant outlet temperature indicator. The permittee shall calibrate the

coolant outlet temperature indicators in a satisfactory manner. The temperature indicators are calibrated yearly, and the last two calibrations were 11/19/21 and 11/19/22.

Several stacks were listed for EU2504-13, EU2504-14, EU2504-15 and EU2504-16. As previously discussed, due to the recent identification of ethylene oxide and requirements per the NESHAP Subpart FFFF, the emission units are now connected to the THROX for control. This has resulted in several of the stacks having been removed. Photo verification was provided for each of the remaining stack exhausts. Though the dimensions were not measured they appeared to be consistent with what is identified in MI-ROP-A4043-2019a.

Offsite Records (EU2504-13, EU2504-14, EU2504-15, EU2504-16)

Per SC VI.2, the permittee shall monitor and record, on a continuous basis, the coolant outlet temperature of the chilled water / glycol condenser train (24608 / 24609 or 24610 / 24611) through which EU2504-13 / EU2504-14 / EU2504-15 / EU2504-16 exhausts with instrumentation acceptable to the AQD District Supervisor. Records were requested and reviewed at length during the onsite inspection. Based on the records reviewed, it appears that DSC is keeping track of applicable records.

EU2504-13: This emission unit is subject to a VOC emission limit of 2.0 tons per year (tpy) per a 12-month rolling time period. It should be noted that this emission limit does not include fugitive emissions (i.e., emissions from leaking valves, flanges, etc.) from the emission limit. Records were requested and reviewed for select time periods. For the month of January 2023, 39.81 lbs of VOCs were reported emitted. As of January 2023, 429.38 lbs (approximately 0.214 tons per year (tpy)) of VOCs were reported emitted per a 12-month rolling time which is well within the permitted limit. Previous 12-month rolling time periods reviewed were also within the permitted limit.

EU2504-14: This emission unit is subject to a VOC emission limit of 0.87 tpy per a 12-month rolling time period. It should be noted that this emission limit does not include fugitive emissions (i.e., emissions from leaking valves, flanges, etc.) from the emission limit. Records were requested and reviewed for select time periods. For the month of January 2023, 72.72 lbs of VOCs were reported emitted. As of January 2023, 711.01 lbs (approximately 0.355 tpy) of VOCs were reported emitted per a 12-month rolling time period. Previous 12-month rolling time periods reviewed also appeared to be within the permitted limit.

EU2504-15: This emission unit is subject to a VOC emission limit of 0.92 tpy per a 12-month rolling time period. It should be noted that this emission limit does not include fugitive emissions (i.e., emissions from leaking valves, flanges, etc.) from the emission limit. Records were requested and reviewed for select time periods. For the month of January 2023, 69.19 lbs of VOCs were reported emitted. As of January 2023, 737.82 lbs (approximately 0.368 tpy) of VOCs were reported emitted which is well within the permitted limit. Previous 12-month rolling time periods reviewed also appeared to be within the permitted limit.

EU2504-16: This emission unit is subject to a VOC emission limit of 1.58 tpy per a 12-month rolling time period. It should be noted that this emission limit does not include fugitive emissions (i.e., emissions from leaking valves, flanges, etc.) from the emission limit. Records were requested and reviewed for select time periods. For the month of January 2023, 39.24 lbs of VOCs were reported emitted. As of January 2023, 953.46 lbs (approximately 0.476 tpy) of VOCs were reported emitted per a 12-month rolling time period

which is within the permitted limit. Previous 12-month rolling time periods reviewed also appeared to be within the permitted limit.

FGMONMACT – Only for EU2504-14, EU2504-15 and EU2504-16

This flexible group applies to miscellaneous organic chemical manufacturing process units (MCPUs) that are located at, or are part of, a major source and meet the criteria specific in the NESHAP Subpart FFFF.

During the site inspection, company staff explained that the emission units EU2504-14, EU2504-15 and EU2504-16 are subject to the NESHAP Subpart FFFF, however, they are exempt under the Batch Process Vent exemption. The emission unit's qualify for this exemption because total uncontrolled HAP emissions are less than 200 lb/yr for each MCPU. The three emission units are associated with MCPU's 199, 200 and 206. After further review this appears acceptable.

Conclusion

Based on the observations made and records reviewed, DSC appears to be in compliance with MI-ROP-A4043-2019a, specifically the portions related to EU2504-13 EU2504-14, EU2504-15 and EU2504-16.

NAME Adam J. Griffith DATE 05/24/23 SUPERVISOR C. Hare